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## SEQUENCE LISTING

<110> Taramino, Graziana  
Sakai, Hajime  
Meeley, Robert B.  
Niu, Xiaomu

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 Gln Gly Val His Glu Asp Ala Lys Gly Tyr Val Gly Ser Ala Ala Ala  
 115 120 125

gag cag cta ggt tac ggc tac ccc tgg tgc agc ggc aat gga ggc gcc 432  
 Glu Gln Leu Gly Tyr Gly Tyr Pro Trp Cys Ser Gly Asn Gly Gly Ala  
 130 135 140

gca gca gca gca ggc gcc gtg ggc gcg ccc gcc gcg cag ccg ggc gcg 480  
 Ala Ala Ala Ala Gly Ala Val Gly Ala Pro Ala Ala Gln Pro Gly Ala  
 145 150 155 160

tac ggc aat ggc gcg cac gag tcc ctg acc gcg ctg ctg ggg tcg tcg 528  
 Tyr Gly Asn Gly Ala His Glu Ser Leu Thr Ala Leu Leu Gly Ser Ser  
 165 170 175

gac tac atg cag cag tcg ctg tac cac gcg ttc gag cag gcc ggc gcg 576  
 Asp Tyr Met Gln Gln Ser Leu Tyr His Ala Phe Glu Gln Ala Gly Ala  
 180 185 190

gac gac gac gac ggc cgg cag ggg tac ggc ttc gag gca gcg gcg gag 624  
 Asp Asp Asp Asp Gly Arg Gln Gly Tyr Gly Phe Glu Ala Ala Ala Glu  
 195 200 205

tcc tcg tcg ctc ggg gcg gag gag agc ggg tgg agg tcg tcg tcg ggg 672  
 Ser Ser Ser Leu Gly Ala Glu Glu Ser Gly Trp Arg Ser Ser Ser Gly  
 210 215 220

tac caa gac tgc gag gac ctg cag agc gtg gct tac gct tac ctg aac 720  
 Tyr Gln Asp Cys Glu Asp Leu Gln Ser Val Ala Tyr Ala Tyr Leu Asn  
 225 230 235 240

cat cgc tcg taa 732  
 His Arg Ser

<210> 6  
 <211> 243  
 <212> PRT  
 <213> Zea Maize

<400> 6

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Lys Cys Val Arg Gly Cys Val Phe Ala Pro Tyr Phe Cys His Glu Gln  
 20 25 30

Gly Ala Ala His Phe Ala Ala Ile His Lys Val Phe Gly Ala Ser Asn  
 35 40 45

Val Ser Lys Leu Leu Ala His Leu Pro Leu Ala Asp Arg Ala Glu Ala  
 50 55 60

Ala Val Thr Ile Ser Tyr Glu Ala Gln Ala Arg Leu Arg Asp Pro Ile  
 65 70 75 80

Tyr Gly Cys Val Ala His Ile Phe Ala Leu Gln Gln Gln Val Met Thr  
 85 90 95

Leu Gln Ala Gln Leu Ala Ser Leu Lys Ala Gln Ala Ala Gln Gly Gln  
 100 105 110

Gln Gly Val His Glu Asp Ala Lys Gly Tyr Val Gly Ser Ala Ala Ala  
 115 120 125

Glu Gln Leu Gly Tyr Gly Tyr Pro Trp Cys Ser Gly Asn Gly Gly Ala  
 130 135 140

Ala Ala Ala Ala Gly Ala Val Gly Ala Pro Ala Ala Gln Pro Gly Ala  
 145 150 155 160

Tyr Gly Asn Gly Ala His Glu Ser Leu Thr Ala Leu Leu Gly Ser Ser  
 165 170 175

Asp Tyr Met Gln Gln Ser Leu Tyr His Ala Phe Glu Gln Ala Gly Ala  
 180 185 190

Asp Asp Asp Asp Gly Arg Gln Gly Tyr Gly Phe Glu Ala Ala Ala Glu  
 195 200 205

Ser Ser Ser Leu Gly Ala Glu Glu Ser Gly Trp Arg Ser Ser Ser Gly  
 210 215 220

Tyr Gln Asp Cys Glu Asp Leu Gln Ser Val Ala Tyr Ala Tyr Leu Asn  
 225 230 235 240

His Arg Ser

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 <211> 780  
 <212> DNA  
 <213> Oryza sativa

<220>  
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 <222> (1)..(780)

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 aag tgc gtg cgc ggg tgc gtg ttc gcg cca tac ttc tgc cac gag caa 96  
 Lys Cys Val Arg Gly Cys Val Phe Ala Pro Tyr Phe Cys His Glu Gln  
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 ggg gcg gcg cac ttc gcc gcc atc cac aag gtg ttc ggc gcc agc aac 144  
 Gly Ala Ala His Phe Ala Ala Ile His Lys Val Phe Gly Ala Ser Asn  
 35 40 45  
 gtg tcc aag ctg ctc gcc cac ctg ccg ctc gcc gac cgc ccc gag gcc 192  
 Val Ser Lys Leu Leu Ala His Leu Pro Leu Ala Asp Arg Pro Glu Ala  
 50 55 60  
 gcc gtc act atc tcc tac gag gcg cag gcc cgc ctc cgc gac ccc atc 240  
 Ala Val Thr Ile Ser Tyr Glu Ala Gln Ala Arg Leu Arg Asp Pro Ile  
 65 70 75 80  
 tat ggc tgc gtc gcc cac atc ttc gcc ctc cag cag cag gtt atg acg 288  
 Tyr Gly Cys Val Ala His Ile Phe Ala Leu Gln Gln Gln Val Met Thr  
 85 90 95  
 ctg cag gcg cag ctg gcg tgc ctc aag gcg gcg gcg gcg caa ggg ata 336  
 Leu Gln Ala Gln Leu Ala Ser Leu Lys Ala Ala Ala Ala Gln Gly Ile  
 100 105 110  
 cac cac cag gac gtc ggc gcc acc acc aag ggc ggc tac atg agc gcc 384  
 His His Gln Asp Val Gly Ala Thr Lys Gly Gly Tyr Met Ser Ala  
 115 120 125  
 gcc gcc acc gcc gcc gac gac caa tta ggg tac ggc ggc tac aac cag 432  
 Ala Ala Thr Ala Ala Asp Asp Gln Leu Gly Tyr Gly Gly Tyr Asn Gln  
 130 135 140  
 tgg tgc ggc agc aat ggg ggc ggc gcg ccg gcg gcg tgc cag ccg ggc 480  
 Trp Cys Gly Ser Asn Gly Gly Gly Ala Pro Ala Ala Ser Gln Pro Gly  
 145 150 155 160  
 gcg tat agc agc aat ggc ggc gcc ggc cac ggc cac gac tcc atc acc 528  
 Ala Tyr Ser Ser Asn Gly Gly Ala Gly His Gly His Asp Ser Ile Thr  
 165 170 175  
 gcg ctg ctg gcg gcc ggg tgc gac tac atg cag cac tgc ctg tac cac 576

Ala Leu Leu Ala Ala Gly Ser Asp Tyr Met Gln His Ser Leu Tyr His  
 180 185 190

gcg ttc gag cac tcg gag ggc gcc ggc gcc gtg gac gac ggg cac gcg 624  
 Ala Phe Glu His Ser Glu Gly Ala Gly Ala Val Asp Asp Gly His Ala  
 195 200 205

gcc gcc gcg gcc ttc gag gcg gcg gcg gag tcg tcg tcg tgc ggc atg 672  
 Ala Ala Ala Ala Phe Glu Ala Ala Ala Glu Ser Ser Ser Cys Gly Met  
 210 215 220

gcg gcg tcg ttc gcc gcc gac gag agc gtg tgg agg tcg tcg tcg tcg 720  
 Ala Ala Ser Phe Ala Ala Asp Glu Ser Val Trp Arg Ser Ser Ser Ser  
 225 230 235 240

gga tac caa gat tgc gag gat ctc cag agc gtc gcc tac gct tac ctt 768  
 Gly Tyr Gln Asp Cys Glu Asp Leu Gln Ser Val Ala Tyr Ala Tyr Leu  
 245 250 255

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 Asn Arg Ser

<210> 8  
 <211> 259  
 <212> PRT  
 <213> Oryza sativa

<400> 8

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Lys Cys Val Arg Gly Cys Val Phe Ala Pro Tyr Phe Cys His Glu Gln  
 20 25 30

Gly Ala Ala His Phe Ala Ala Ile His Lys Val Phe Gly Ala Ser Asn  
 35 40 45

Val Ser Lys Leu Leu Ala His Leu Pro Leu Ala Asp Arg Pro Glu Ala  
 50 55 60

Ala Val Thr Ile Ser Tyr Glu Ala Gln Ala Arg Leu Arg Asp Pro Ile  
 65 70 75 80

Tyr Gly Cys Val Ala His Ile Phe Ala Leu Gln Gln Gln Val Met Thr  
 85 90 95

Leu Gln Ala Gln Leu Ala Ser Leu Lys Ala Ala Ala Ala Gln Gly Ile  
 100 105 110

His His Gln Asp Val Gly Ala Thr Thr Lys Gly Gly Tyr Met Ser Ala

115                      120                      125  
 Ala Ala Thr Ala Ala Asp Asp Gln Leu Gly Tyr Gly Gly Tyr Asn Gln  
     130                      135                      140  
 Trp Cys Gly Ser Asn Gly Gly Gly Ala Pro Ala Ala Ser Gln Pro Gly  
     145                      150                      155                      160  
 Ala Tyr Ser Ser Asn Gly Gly Ala Gly His Gly His Asp Ser Ile Thr  
                     165                      170                      175  
 Ala Leu Leu Ala Ala Gly Ser Asp Tyr Met Gln His Ser Leu Tyr His  
                     180                      185                      190  
 Ala Phe Glu His Ser Glu Gly Ala Gly Ala Val Asp Asp Gly His Ala  
                     195                      200                      205  
 Ala Ala Ala Ala Phe Glu Ala Ala Ala Glu Ser Ser Ser Cys Gly Met  
                     210                      215                      220  
 Ala Ala Ser Phe Ala Ala Asp Glu Ser Val Trp Arg Ser Ser Ser Ser  
     225                      230                      235                      240  
 Gly Tyr Gln Asp Cys Glu Asp Leu Gln Ser Val Ala Tyr Ala Tyr Leu  
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Asn Arg Ser

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<220>  
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<220>  
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 <223> Xaa can be any naturally occurring amino acid

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<221> misc\_feature  
 <222> (107)..(107)  
 <223> Xaa can be any naturally occurring amino acid

<400> 9

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 1 5 10 15

Lys Cys Val Arg Gly Cys Val Phe Ala Pro Tyr Phe Cys His Glu Gln  
 20 25 30

Gly Ala Ala His Phe Ala Ala Ile His Lys Val Phe Gly Ala Ser Asn  
 35 40 45

Val Ser Lys Leu Leu Ala His Leu Pro Leu Ala Asp Arg Xaa Glu Ala  
 50 55 60

Ala Val Thr Ile Ser Tyr Glu Ala Gln Ala Arg Leu Arg Asp Pro Ile  
 65 70 75 80

Tyr Gly Cys Val Ala His Ile Phe Ala Leu Gln Gln Gln Val Met Thr  
 85 90 95

Leu Gln Ala Gln Leu Ala Ser Leu Lys Ala Xaa Ala Ala Gln Gly  
 100 105 110

<210> 10  
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 <212> PRT  
 <213> Zea Maize

<220>  
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 <223> Xaa = any amino acid

<220>  
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 <222> (6)..(6)  
 <223> Xaa can be any naturally occurring amino acid

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 <223> Xaa can be any naturally occurring amino acid

<220>  
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 <223> Xaa can be any naturally occurring amino acid

<220>  
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<400> 10

Gln Leu Gly Tyr Gly Xaa Tyr Xaa Pro Trp Cys Xaa Xaa Asn Gly Gly  
 1 5 10 15

Xaa Ala Xaa Ala Ala  
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<210> 11  
 <211> 13  
 <212> PRT  
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<220>  
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 <223> Xaa=any amino acid

<220>  
 <221> misc\_feature  
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 <223> Xaa can be any naturally occurring amino acid

<400> 11

Ser Asp Tyr Met Gln Xaa Ser Leu Tyr His Ala Phe Glu  
 1 5 10

<210> 12  
 <211> 10  
 <212> PRT  
 <213> Zea maize

<220>  
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<400> 12

Gly Phe Glu Ala Ala Ala Glu Ser Ser Ser  
 1 5 10

<210> 13

<211> 28  
 <212> PRT  
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 <223> Xaa=any amino acid

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 <223> Xaa can be any naturally occurring amino acid

<220>  
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 <223> Xaa can be any naturally occurring amino acid

<220>  
 <221> misc\_feature  
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 <223> Xaa can be any naturally occurring amino acid

<400> 13

Ala	Xaa	Glu	Ser	Xaa	Trp	Arg	Ser	Ser	Ser	Xaa	Gly	Tyr	Gln	Asp	Cys
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Glu	Asp	Leu	Gln	Ser	Val	Ala	Tyr	Ala	Tyr	Leu	Asn
		20						25			

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 <211> 20  
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20

<210> 15  
 <211> 20  
 <212> DNA  
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<400> 15



cgccctgtgat tgcactacac

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<210> 16  
<211> 20  
<212> DNA  
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<221> primer\_bind  
<222> (1)..(20)

<400> 16  
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20

<210> 17  
<211> 20  
<212> DNA  
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<222> (1)..(20)

<400> 17  
agcaccgttt ctcgtagat

20

<210> 18  
<211> 24  
<212> DNA  
<213> Zea maize

<220>  
<221> primer\_bind  
<222> (1)..(24)

<400> 18  
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24

<210> 19  
<211> 24  
<212> DNA  
<213> Zea maize

<220>  
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<400> 19  
gctcaaaggc aaggcagtat tttta

24

<210> 20

<211> 24  
<212> DNA  
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<220>  
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<222> (1)..(24)

<400> 20  
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24

<210> 21  
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<212> DNA  
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24

<210> 22  
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<400> 22  
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20

<210> 23  
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<400> 23  
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<210> 24  
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<213> Zea maize

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&lt;221&gt; primer\_bind

&lt;222&gt; (1)..(23)

&lt;400&gt; 24

aatagcgcaa gctgctgttg tat

23

&lt;210&gt; 25

&lt;211&gt; 23

&lt;212&gt; DNA

&lt;213&gt; Zea maize

&lt;220&gt;

&lt;221&gt; primer\_bind

&lt;222&gt; (1)..(23)

&lt;400&gt; 25

cccttgtcac tgtcgaaacc tac

23

&lt;210&gt; 26

&lt;211&gt; 287

&lt;212&gt; PRT

&lt;213&gt; Oryza sativa

&lt;220&gt;

&lt;221&gt; MISC\_FEATURE

&lt;222&gt; (1)..(287)

&lt;400&gt; 26

Met Thr Gly Phe Gly Ser Pro Cys Gly Ala Cys Lys Phe Leu Arg Arg  
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Lys Cys Val Arg Gly Cys Val Phe Ala Pro Tyr Phe Cys His Glu Gln  
 20 25 30

Gly Ala Ala His Phe Ala Ala Ile His Lys Val Phe Gly Ala Ser Asn  
 35 40 45

Val Ser Lys Leu Leu Ala His Leu Pro Leu Ala Asp Arg Pro Glu Ala  
 50 55 60

Ala Val Thr Ile Ser Tyr Glu Ala Gln Ala Arg Leu Arg Asp Pro Ile  
 65 70 75 80

Tyr Gly Cys Val Ala His Ile Phe Ala Leu Gln Gln Gln Val Arg Ile  
 85 90 95

Val His Ser Ile Asp Val Ser Leu Val Gly Val Ala Gly Leu Leu Ile

100 105 110  
 Leu Val Ser Arg Arg Val Phe Glu Gln Val Met Thr Leu Gln Ala Gln  
 115 120 125  
 Leu Ala Ser Leu Lys Ala Ala Ala Gln Gly Ile His His Gln Asp  
 130 135 140  
 Val Gly Ala Thr Thr Lys Gly Gly Tyr Met Ser Ala Ala Ala Thr Ala  
 145 150 155 160  
 Ala Asp Asp Gln Leu Gly Tyr Gly Gly Tyr Asn Gln Trp Cys Gly Ser  
 165 170 175  
 Asn Gly Gly Gly Ala Pro Ala Ala Ser Gln Pro Gly Ala Tyr Ser Ser  
 180 185 190  
 Asn Gly Gly Ala Gly His Gly His Asp Ser Ile Thr Ala Leu Leu Ala  
 195 200 205  
 Ala Gly Ser Asp Tyr Met Gln His Ser Leu Tyr His Ala Phe Glu His  
 210 215 220  
 Ser Glu Gly Ala Gly Ala Val Asp Asp Gly His Ala Ala Ala Ala Ala  
 225 230 235 240  
 Phe Glu Ala Ala Ala Glu Ser Ser Ser Cys Gly Met Ala Ala Ser Phe  
 245 250 255  
 Ala Ala Asp Glu Ser Val Trp Arg Ser Ser Ser Ser Gly Tyr Gln Asp  
 260 265 270  
 Cys Glu Asp Leu Gln Ser Val Ala Tyr Ala Tyr Leu Asn Arg Ser  
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 <211> 218  
 <212> PRT  
 <213> Arabidopsis thaliana

<220>  
 <221> MISC\_FEATURE  
 <222> (1)..(218)

<400> 27

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<211> 3286
<212> DNA
<213> Zea maize
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&lt;221&gt; gene

&lt;222&gt; (1)..(3286)

&lt;400&gt; 28

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attctgtgaa gcagaacaga ggcggcagag tttcagaagt tctgctgccc tgttccagtc	180
cttcataagg gcaaccgtgc aactgctata ctacacgtag gaacagtaca tcttcagcta	240
tactaaattc agtttttttct tcttcttaca aacgcatatt ttaagctaca gcattggcag	300
gccattgctc gatttgTTTT tttctcggtg gttggactta catgcctaca ggaaaaactaa	360
aacaatacgt atatgtggtt ttctgataat caaatcaaag ggggaggggg gatgtgacac	420
cagaactagt tctttcccat caccattat tgtttgcttt tgcccagtct cgcgaagaaa	480
aaaaaatgaa atcaaaaagaa aatatcaaag cgacgagcag cgacaactcc acgtctggag	540
ccaggtgatg tatgagtgca ggtactacac ggtacataga ttttattttt ttaaaaaaaaa	600
atcataagca tttattttat ttatcccaa attatgaact ggactttgct cgctggtctc	660
gcagcagccg agcccaactg cacacaaaag aaatgggcgc atgagcaggc acagaaaaac	720
taaacagaga aagcatgcat taattagacc aaacccaaaa cccctaagca aaagattagc	780
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aagcaatggc ggaggggtct tgctcttgca ttgcacctcc ggccaccgcg ccatagccccg	1080
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acaaggtgtt cggcgccagc aacgtgtcca agctgctcgc gcacctgccg ctgcgccgacc	1380
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ccgcgccgtc tctgggcttg tctcttaatt gtgatagggt ttaattgctg accggccccg	1560
gccaatcgat ccaggttatg accctgcagg cgcagctggc gtcgctcaag gcgcaggcgg	1620

cgcaggggca gcagggcggtg cacgaagacg ccaagggcta cgtgggcagc gccgcccgcg 1680  
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 ataatagatc cacacattat tgatcatcag tgtagaaatt aacgtacgta gcctaattaa 2280  
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 aatcatgac cattacatac ttaaaaaggg ataattatgg cgactcatca taattagtgt 3180  
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<210> 29  
 <211> 735  
 <212> DNA

&lt;213&gt; Zea Maize

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(735)

&lt;400&gt; 29

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Met Thr Gly Phe Gly Ser Pro Cys Gly Ala Cys Lys Phe Leu Arg Arg	
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aag tgc gtg cgc ggc tgc gtc ttc gcg ccc tac ttc tgc cac gag cag	96
Lys Cys Val Arg Gly Cys Val Phe Ala Pro Tyr Phe Cys His Glu Gln	
20 25 30	
ggc gcg gcg cac ttc gcc gcc atc cac aag gtg ttc ggc gcc agc aac	144
Gly Ala Ala His Phe Ala Ala Ile His Lys Val Phe Gly Ala Ser Asn	
35 40 45	
gtg tcc aag ctg ctc gcg cac ctg ccg ctc gcc gac cgc gcc gag gcc	192
Val Ser Lys Leu Leu Ala His Leu Pro Leu Ala Asp Arg Ala Glu Ala	
50 55 60	
gcc gtc acc atc tcc tac gag gcg cag gcg agg ctg cgg gac ccc atc	240
Ala Val Thr Ile Ser Tyr Glu Ala Gln Ala Arg Leu Arg Asp Pro Ile	
65 70 75 80	
tat ggc tgc gtc gcc cac atc ttc gcg cta cag cag cag gtg atg acc	288
Tyr Gly Cys Val Ala His Ile Phe Ala Leu Gln Gln Gln Val Met Thr	
85 90 95	
ctg cag gcg cag ctg gcg tcg ctc aag gcg cag gcg gcg cag ggg cag	336
Leu Gln Ala Gln Leu Ala Ser Leu Lys Ala Gln Ala Ala Gln Gly Gln	
100 105 110	
cag ggc gtg cac gaa gac gcc aag ggc tac gtg ggc agc gcc gcc gcg	384
Gln Gly Val His Glu Asp Ala Lys Gly Tyr Val Gly Ser Ala Ala Ala	
115 120 125	
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Glu Gln Leu Gly Tyr Gly Tyr Pro Trp Cys Ser Gly Asn Gly Gly Ala	
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gca gca gca gca gca ggc gcc gtg ggc gcg ccc gcc gcg cag ccg ggc	480
Ala Ala Ala Ala Ala Gly Ala Val Gly Ala Pro Ala Ala Gln Pro Gly	
145 150 155 160	
gcg tac ggc aat ggc gcg cac gag tcc ctg acc gcg ctg ctg ggg tcg	528
Ala Tyr Gly Asn Gly Ala His Glu Ser Leu Thr Ala Leu Leu Gly Ser	
165 170 175	
tcg gac tac atg cag cag tcg ctg tac cac gcg ttc gag cag gcc ggc	576
Ser Asp Tyr Met Gln Gln Ser Leu Tyr His Ala Phe Glu Gln Ala Gly	
180 185 190	
gcg gac gac gac gac ggc cgg cag ggg tac gcc ttc gag gca gcg gcg	624
Ala Asp Asp Asp Asp Gly Arg Gln Gly Tyr Ala Phe Glu Ala Ala Ala	
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 Gly Tyr Gln Asp Cys Glu Asp Leu Gln Ser Val Ala Tyr Ala Tyr Leu  
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 Asn His Arg Ser

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Gly Ala Ala His Phe Ala Ala Ile His Lys Val Phe Gly Ala Ser Asn  
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Val Ser Lys Leu Leu Ala His Leu Pro Leu Ala Asp Arg Ala Glu Ala  
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Ala Val Thr Ile Ser Tyr Glu Ala Gln Ala Arg Leu Arg Asp Pro Ile  
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Tyr Gly Cys Val Ala His Ile Phe Ala Leu Gln Gln Gln Val Met Thr  
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Leu Gln Ala Gln Leu Ala Ser Leu Lys Ala Gln Ala Ala Gln Gly Gln  
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Gln Gly Val His Glu Asp Ala Lys Gly Tyr Val Gly Ser Ala Ala Ala  
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Glu Gln Leu Gly Tyr Gly Tyr Pro Trp Cys Ser Gly Asn Gly Gly Ala  
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Ala Ala Ala Ala Ala Gly Ala Val Gly Ala Pro Ala Ala Gln Pro Gly  
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Ala Tyr Gly Asn Gly Ala His Glu Ser Leu Thr Ala Leu Leu Gly Ser  
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Ser Asp Tyr Met Gln Gln Ser Leu Tyr His Ala Phe Glu Gln Ala Gly  
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Ala Asp Asp Asp Asp Gly Arg Gln Gly Tyr Ala Phe Glu Ala Ala Ala  
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Glu Ser Ser Ser Leu Gly Ala Glu Glu Ser Gly Trp Arg Ser Ser Ser  
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 Tyr Gly Cys Val Ala His Ile Phe Ala Leu Gln Gln Gln Val Met Ala  
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 Tyr Gly Asn Val Gly His Glu Ser Leu Thr Ala Leu Leu Arg Ser Glu  
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